



A closer look at science-based environmental management

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More Information

For more information or to request a briefing or a tour about Environmental Management at the INEEL call:

1-800-708-2680

Agencies To Decide Fate Of The Calciner

Under a consent order with the state of Idaho, the calciner at the Idaho Nuclear Technology and Engineering Center will be placed into a standby mode. Whether the calciner processes liquid radioactive waste in the future will depend on decisions made by the final Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement and the Record of Decision.

The Department of Energy, the state of Idaho and the Environmental Protection Agency will decide the fate of the calciner located at the Idaho Nuclear Technology and Engineering Center when preferred alternatives are chosen in the High-Level Waste Facilities and Disposition Environmental Impact Statement and Record of Decision. If the decision is made to use the calciner to treat the liquid radioactive waste, it would have to be upgraded to meet new emission requirements and receive a final Resource Conservation and Recovery Act Part B permit. The calciner began operating in 1982 prior to the issuance of air and RCRA permitting requirements. Beginning in 1989, the calciner has operated under a RCRA Part A interim status permit.

Calcining converts liquid radioactive waste into a dry granular powder that resembles dry laundry detergent. It was developed in the 1950s at the INEEL and was used in production scale to treat acidic liquid radioactive waste starting in 1963. Over the past 37 years, calcining has converted more than 7.5 million gallons of liquid radioactive waste into about 1.1 million gallons of dry calcine. Without this process, the INEEL would have almost 9 million gallons of acidic liquid radioactive waste stored in tanks sitting above the aquifer. Because of calcining, there are currently only 1.3 million gallons still in tanks that need some form of processing.

Calcine is more desirable than liquid radioactive waste because the calcine is smaller in volume, is much less corrosive, chemically reactive, mobile under most conditions, and is easier to monitor and more protective of human health and the environment.

The current calcining campaign, which began in mid-March 2000, has been providing information to DOE about off-gas emissions that will help officials determine if the calciner can be modified and permitted to meet current Clean Air Act and RCRA Part B permitting requirements.



The *INEEL Reporter* is a bimonthly DOE newsletter for the public produced by the INEEL Environmental Management Program.

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Feasibility Study Underway

A remedial investigation/feasibility study at the Idaho Nuclear Technology and Engineering Center has been initiated to study the Tank Farm soils and the aquifer beneath the facility. The scope of work was developed and approved by the state of Idaho, Environmental Protection Agency and the Department of Energy.

The remedial investigation/feasibility study of the Tank Farm soils and the aquifer beneath the Idaho Nuclear Technology and Engineering Center has begun. The scope of work has been approved by the state of Idaho's Department of Environmental Quality and Environmental Protection Agency Region 10. The next step is the development of the feasibility study work plan. This plan will outline the approach to investigate and analyze data before decisions are made about the Tank Farm soils and Snake River Plain Aquifer inside of the facility fence.

Tank Farm Soils

Two remaining Tank Farm soil issues will be addressed by the feasibility study. One issue is that the distribution, quantities and concentrations of contaminants in the Tank Farm soil is poorly known. The second issue is that there is not enough data concerning the volume and characteristics of soil that requires remediation.

The feasibility study will also evaluate various technologies to remediate contaminated soils, such as containment, removal, in situ and ex situ treatment, along with on-site and off-site disposal options.

The mobility of contaminants, additional water sources, and volume and flow rate of moisture moving through the Tank Farm soil will be also evaluated.

Snake River Plain Aquifer Inside INTEC Fence

The extent, type and concentration of contamination at the CP-23 injection well, and subsequent secondary sources in the vadose zone, will be evaluated. The injection well was used from 1953 to 1984 to inject low-level radioactive and chemical wastes into the aquifer, an approved method at the time. The well was removed from service in 1986 and capped in 1989.

Disposal of wastes through the injection well has been a factor affecting water quality downgradient from the facility. Sampling has identified three contaminants above federal drinking water standards: tritium, strontium-90 and iodine-129. Other contaminants have been identified at levels below federal drinking water standards.

Decisions on the risk posed by Tank Farm soil contaminants, and any risk posed by contamination from the injection well, will be made after data from the feasibility study is evaluated. ▼



Audit on Transuranic Waste Program Goes Well

A recent audit on the debris portion of the INEEL's Transuranic Waste Program looked at incorporation of Resource Conservation and Recovery Act permit requirements for the Waste Isolation Pilot Plant. The INEEL received an Exemplary Practice and three findings.

The INEEL's Transuranic Waste Program underwent a rigorous audit April 24-28, 2000, by the Department of Energy-Carlsbad Area Office. The purpose of the audit was to verify the implementation of new Resource Conservation and Recovery Act regulations required by the state of New Mexico for disposal of transuranic-contaminated waste. Approximately 40 people representing DOE-Carlsbad Area Office, DOE-Headquarters, the Environmental Protection Agency, state of New Mexico and the state of Idaho visited the site either as auditors or observers.


The audit was performed on the portion of the INEEL's program that deals with debris waste. About 35 percent of the inventory is debris waste ~ coveralls, booties, gloves and tools. The remainder is waste that has been grouted into a sludge-like material or solidified.

The audit on the debris portion of the program resulted in one exemplary practice and three findings. An exemplary practice is defined as an area of the program that goes beyond the requirements and is recommended to be implemented across other DOE sites. A finding notes an area of the program that does not fully meet the requirements. The site's response must state how the inadequacy affected the quality of the data, and how the inadequacy will be prevented from reoccurring. All findings must have a formal written plan that is approved by the DOE-Carlsbad Area Office.

An exemplary practice was noted in the area for loading the transportation container, for the use of the go/no go gauge for drum measurements. This gauge will be recommended for use across the DOE complex.

The findings related to the Transuranic Reporting and Inventory Processing System; visual exam at Argonne National Laboratory-West; and Quality Assurance reporting and surveillance. Formal root cause analysis will be performed on each of these areas and a corrective action plan will be written.

The DOE-Carlsbad Area Office will visit the INEEL in mid-May to verify closure of the findings from this audit. After the visit, they will submit an audit report to the New Mexico Environment Department for review. The New Mexico Environment Department will review the report before issuing certification. The INEEL expects to receive certification authority by the end of June.

After certification authority is received, the INEEL will resume shipments of transuranic waste to the Waste Isolation Pilot Plant. The current schedule has the INEEL making two shipments by the end of June. 



The INEEL's goal is to ship at least 96 cubic meters ~ or approximately 460 55-gallon drums ~ of transuranic-contaminated waste to the WIPP by the end of September. Under an agreement with the state of Idaho, the INEEL must remove 3,100 cubic meters ~ 15,000 drums ~ of transuranic-contaminated waste by Dec. 31, 2002.



Monitoring of the groundwater and deep perched water zone show that tritium concentrations are declining, but chromium levels are still elevated in three wells. The second phase of monitoring begins at the end of May.



Monitored natural attenuation, which scientists have successfully demonstrated at Test Area North, uses biodegradation by naturally occurring bacteria to destroy TCE. TCE, an organic chemical widely used as a degreasing agent, was a component of the sludge disposed of beneath the facility.

Test Reactor Area Field Activities Completed

Remediation of eight sites identified in the Test Reactor Area Record of Decision is complete; however, six potentially contaminated sites have been identified since the decision was signed in 1997. These sites will be investigated, and if they pose a potential risk to people or the environment, they will be remediated.

Remediation of eight sites identified in the Test Reactor Area Record of Decision is complete; however, six potentially contaminated sites have been identified since the decision was signed in 1997. The six new sites are underground pipelines that carried acid, diesel and fuel oil, and a lead contaminated soil area. The INEEL is currently preparing documentation to begin characterizing the sites this year.

As part of the 1997 decision, the INEEL has capped three wastewater disposal ponds with soil and rock: the warm waste pond, chemical waste pond and sewage leach pond. The Department of Energy, Environmental Protection Agency and the state of Idaho have also agreed to continue monitoring the Snake River Plain Aquifer and deep perched water zone beneath the Test Reactor Area. The perched water system is a saturated zone of sediments located about 330 feet above the Snake River Plain Aquifer. It was formed over time due to the percolation of water ~ containing heavy metals and radionuclides ~ from several sources including four wastewater disposal ponds.

Pump-and-Treat May Be Replaced

Pending public review in August 2000, monitored natural attenuation and enhanced in-situ bioremediation may replace pump-and-treat as the final remedy for most of the trichloroethene plume in the Snake River Plain Aquifer beneath Test Area North.

The public will be asked to comment on a recommendation by scientists at the INEEL to replace the traditional pump-and-treat method of groundwater remediation with monitored natural attenuation and enhanced in-situ bioremediation at the Test Area North.

A new pump-and-treat facility will be used to remediate the middle portion of a trichloroethene (TCE) plume in the aquifer, but enhanced in-situ bioremediation will be used in the most contaminated portion of the plume (the hot spot), and monitored natural attenuation will be used in the least contaminated part of the plume.

By comparing the TCE concentrations to those of two other contaminants, tetrachloroethene and tritium, INEEL scientists have determined that the TCE is being degraded naturally at a rate which will meet cleanup objectives. Based on total net present value, the life-cycle cost for monitored natural attenuation and enhanced in-situ bioremediation over 30 years will be a substantial savings over pump-and-treat cost over the same period.

Monitored natural attenuation is the second biologic process that is recommended to replace the pump-and-treat technology to remediate TCE at the INEEL. Enhanced in-situ bioremediation, developed at the INEEL, has already been demonstrated successfully at the hot spot around the injection well. In that

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process, a harmless food preservative called sodium lactate, is injected into the aquifer. The additive feeds naturally occurring bacteria that break down TCE, which remediates the contaminated groundwater.

Scientists propose using these two different forms of bioremediation, along with the new pump-and-treat facility, to complement each other and clean up the pollution more cost effectively, completely and more quickly than they could by using other means.

In addition to cost effectiveness, two other important considerations came into play. One is remedial timeframe effectiveness: the data indicate monitored natural attenuation will meet the remedial action objectives in the record of decision within the required time (by the year 2095). Enhanced in-situ bioremediation will meet the remedial action objectives within 15 years, which is two to six times faster than pump-and-treat.

The second consideration is performance metrics: regular monitoring data will be evaluated to verify that these treatment methods continue to effectively clean up the aquifer, over the expected time period.

New Technology Aids in Measuring Data

Idaho National Engineering and Environmental Laboratory researchers are developing a new technology for the nondestructive assay of spent nuclear fuel, remote-handled transuranic waste and other fissile material.

The Multi-Detector Analysis System will provide a safe, efficient technology for measuring the quantities of fission products and fissile radioactive material in sealed containers. The collected spent nuclear fuel or transuranic waste characterization data may serve as official information for transportation, storage or disposal of the spent nuclear fuel or transuranic waste.

The new technology will support safe determination of the type and amount of selected radioactive elements without opening sealed containers. This ability to nondestructively characterize spent nuclear fuel and other waste types will reduce the potential for human exposure to radiation and harmful substances. It will also eliminate additional wastes generated by some other assay methods.

MDAS is made possible by the significant advances in computer speeds and capabilities to collect and process data. Additionally, MDAS is unique in that the system does not require special calibration standards or previous characterization knowledge on a particular spent fuel element or transuranic waste package to perform its analysis.

This research system is a test-bed to develop and customize basic characterization methods. The Transient Reactor Test Facility at Argonne National Laboratory-West at the INEEL, houses the equipment. Here, ANL-W operations staff work with INEEL investigators in the project's research and development. Funding for MDAS comes from the Department of Energy's Environmental Management programs, such as the National Spent Nuclear Fuel Program and the Mixed Waste Focus Area.



If routine monitoring indicates monitored natural

attenuation won't get the job done by 2095, the default remedy, pump-and-treat, will be used.



Department Reaches Agreement In Lawsuit

The Department of Energy announced plans to put on hold an incinerator to treat nuclear waste stored at the Radioactive Waste Management Complex. Energy Secretary Bill Richardson announced that an agreement was reached that settles litigation challenging the proposed development and operation of the incinerator.

Plans for an incinerator to treat transuranic waste were put on hold as part of an agreement the Department of Energy reached with litigants in a suit against the agency. The agreement allows construction of the rest of the Advanced Mixed Waste Treatment Facility to begin upon issuance of required permits.

Secretary Richardson appointed a blue-ribbon panel to evaluate and recommend new technology initiatives that the department should pursue to establish alternatives to radioactive mixed waste incineration. The task force members offer a broad range of expertise and experience in environmental management, and the legal and technical aspects of hazardous waste management and related treatment technologies.

Richardson's decision to build a modified facility will not affect the department's obligation and commitment to treat and remove 65,000 cubic meters of waste from the state by 2018 in accordance with a Settlement

Agreement signed with the state of Idaho. Since most of this waste was never considered for incineration, the department concluded it could defer construction of an incinerator without jeopardizing its ability to meet its

legal obligations. Since the incinerator portion of the plant will not be built at this time, the department and the contractor will request that the state of Idaho and the Environmental Protection Agency issue a partial permit that would allow DOE to begin construction of the other components of this facility. ▼



The department hopes construction can begin this fall.



Get Involved

Citizens are encouraged to get involved in decision-making at the INEEL by reviewing and commenting on documents, attending public meetings, and requesting briefings or tours. Information about these public involvement activities can be obtained through:

Target Mailing Lists

Mailing lists are continually updated so interested citizens and groups can automatically receive general or specific INEEL information (electronically or through U.S. Mail). You can be added to mailing lists by calling the INEEL toll-free number.



Toll-Free Phone Number

To obtain specific documents or other information, request a speaker or briefing on a particular topic, inquire about public meetings or public comment periods, or schedule a tour of INEEL, call the INEEL toll-free number at 1 (800) 708-2680.



Videos/Instructional Materials

Videos and brochures are available on a variety of subjects including the Snake River Plain Aquifer, waste management and general INEEL history. To request these items, call the INEEL toll-free number.



Internet

The INEEL Home Page is available at <http://www.inel.gov>. Specific INEEL environmental information is available at <http://environment.inel.gov>. The INEEL Administrative Record is available at <http://ar.inel.gov/home.html>.



Information Repositories

DOE maintains three information repositories throughout Idaho. Information repositories are collections of documents that provide detail and backup information on INEEL cleanup projects.



INEEL Technical Library
DOE Public Reading Room
1776 Science Center Drive
Idaho Falls, ID 83415

Albertson Library
Boise State University
1910 University Drive
Boise, ID 83725

University of Idaho Library
University of Idaho Campus
434 2nd Street
Moscow, ID 83843

INEEL Idaho Falls Office

The INEEL Community Relations Office is located in Idaho Falls and can provide information and briefings on environmental management topics. Call the INEEL Community Relations Plan Coordinator, Erik Simpson, at (208) 526-4700 or call the INEEL toll-free number.



INEEL Boise Regional Office

An INEEL Regional Office is located in Boise to provide information and other resources for those living in the western portion of the state. The office is in process of moving, so please call (208) 334-9572.





Calendar

May

► Late May, the Blue-Ribbon Panel will meet in Washington D.C. to begin assessing and analyzing alternative treatments for incineration at the Advanced Mixed Waste Treatment Facility.



The INEEL Reporter took first place in the Idaho Press Club's external newsletters category. The Reporter competed with many of the state's major corporations, government agencies, universities and nonprofit organizations.



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